

DISPERSAL BEHAVIOR OF JUVENILE MEXICAN SPOTTED OWLS IN NEW MEXICO

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Populations of Mexican spotted owls (*Strix occidentalis lucida*) in the southwestern United States often are small and restricted to "islands" of habitat within isolated mountain ranges. Annual variation in the reproductive success of these owls is high, with few or no young produced in some years. Demographic models predict that most populations under these conditions should quickly go extinct unless there is immigration from other populations. We are currently conducting a study of juvenile dispersal in the Mexican spotted owl in the mountains of central New Mexico to understand the processes by which individuals move among isolated populations. Radiotransmitters were attached to five juveniles in the southern part of the San Mateo Mountains during 1993. All five survived to disperse from their natal territories in late August and September, and none spent the winter in the area where they had been born. Three birds moved to lower elevations in different parts of the San Mateo Mountains, while two others moved across at least 15 km of grasslands to another mountain range southeast of the study area. These birds apparently moved beyond this range as well, although their ultimate fate is unknown. One juvenile that dispersed within the San Mateos in 1993 established a new territory as a singleton at high elevations within the same range during the summer of 1984. The implications of these and related observations for the management of the Mexican spotted owl in the Southwest will be discussed.

GENETIC POPULATION STRUCTURE OF THE MEXICAN SPOTTED OWL (*STRIX OCCIDENTALIS LUCIDA*)

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Mexican spotted owl (*Strix occidentalis lucida*) populations in the mountains of the American Southwest are typically small and naturally fragmented. We have undertaken a study of the genetic population structure of this subspecies to (1) determine if local populations interact as metapopulations, (2) test several alternative models of metapopulation function, and (3) determine if local populations exhibit low levels of genetic diversity. As the initial step in this analysis, we are developing primers for microsatellite loci which can be used to assess genetic variation within and among populations at different geographic and taxonomic scales. Screening of a genomic library with ten different trinucleotide repeats has thus far revealed an abundance of microsatellite sequences. We present results from a preliminary survey of these loci that will allow us to detect and evaluate variation among owls in adjacent

mountain ranges (same potential metapopulation), distant mountain ranges (different metapopulations), geographically isolated populations (limited gene flow), and populations from different subspecies (no gene flow), as well as from sister species and more distantly related species within the same genus.

DEMOGRAPHY OF TWO MEXICAN SPOTTED OWL POPULATIONS IN ARIZONA AND NEW MEXICO: PRELIMINARY RESULTS

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We examined demographic characteristics in a population of Mexican spotted owls (*Strix occidentalis lucida*) in central Arizona and a population in westcentral New Mexico. We located owls at 48 sites in Arizona and 37 sites in New Mexico from 1991-93. Each year we captured and color-banded at least 73% of the territorial owls in Arizona and 90% in New Mexico. We measured density, territory occupancy, social status, nesting effort, fledging rate, fecundity, and survivorship. The highest densities for both areas were observed in 1993, 0.15 owls/km² in Arizona, and 0.18 owls/km² in New Mexico. Higher densities on the New Mexico study area may be due to a higher proportion of suitable owl habitat. Proportion of the Arizona population composed of subadults tripled from 1991 (0.11) to 1993 (0.33), and more than doubled in the New Mexico population from 1991 (0.07) to 1993 (0.16). The large proportion and rapid increase of subadults in the Arizona population may be due to population recovery following suboptimal years prior to our study. Reproductive activity and survivorship were similar between the two areas for all years. There was a large increase in the territorial population on the Arizona study from 1991-93. Such large fluctuations indicate the population may be unstable, and susceptible to extinction. Our data indicate the New Mexico population was close to saturation at the initiation of our study, and is probably more stable.

DENSITIES OF MEXICAN SPOTTED OWLS IN MIXED-CONIFER, PONDEROSA PINE AND PINYON-JUNIPER HABITATS OF SOUTHCENTRAL NEW MEXICO

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During the spring and summer of 1988 we inventoried Mexican spotted owls (*Strix occidentalis lucida*) in the Sacramento Mountains of southcentral New Mexico in order to estimate relative densities of owls in forest and woodland habitats. We stratified our study area into mixed conifer, ponderosa pine, and pinyon-juniper cover types and within each type we inventoried six randomly selected 23 km² plots. Each of the 18 inventory plots received three com-